## REMARKS

In the Final Office Action mailed December 13, 2006, the Examiner took the following action: (1) objected to claim 12; (2) rejected claims 15-16, 18-25, and 27-29 under 35 USC §102(e) as being anticipated by Hanna (US 65745223); (3) rejected claims 1, 2, 4-8, and 10-14 under 35 USC §103(a) as being unpatentable over Hanna in view of Ederer (US 6193922); (4) rejected claim 9 under 35 USC §103(a) as being unpatentable over Hanna in view of Ederer, and further in view of Kulkarni (US 6159411); and (5) rejected claim 26 under 35 USC §103(a) as being unpatentable over Hanna in view of Kulkarni.

### *I. Claim Objection*

The Examiner objected to claim 12 as it failed to further limit and define the claim from which it depended (claim 1). Applicants have cancelled claim 12, and therefore request withdrawal of this objection.

### *II. Claim Rejections Under §102 and §103*

The Examiner rejected claims 15-16, 18-25, and 27-29 under 35 USC §102(e) as being anticipated by Hanna, rejected claims 1, 2, 4-8, and 10-14 under 35 USC §103(a) as being unpatentable over Hanna in view of Ederer, rejected claim 9 under 35 USC §103(a) as being unpatentable over Hanna in view of Ederer, and further in view of Kulkarni, and rejected claim 26 under 35 USC §103(a) as being unpatentable over Hanna in view of Kulkarni. Applicants have amended claims and cancelled claims, and therefore request reconsideration.

Claims 1-2, 4-11, and 13-14

As amended, claim 1 recites:

1. A method for changing a property of a layer-formed plastic part comprised of at least one plastic material, the method comprising:

*forming a first plurality of layers* of a partially completed layer-formed plastic part, the first plurality of layers being formed using at least one of selective laser sintering (SLS) and fused deposition modeling (FDM);

providing an electromagnetic radiation source, the electromagnetic radiation source being at least one of an electron beam, an ultraviolet light source, and a radioactive material;

positioning the partially completed layer-formed plastic part within a potential exposure range of the electromagnetic radiation source;

*forming a second plurality of layers adjacent the first plurality of layers* using at least one of selective laser sintering and fused deposition modeling;

*after the layer-formed plastic part including the first plurality of layers and the second plurality of layers has been formed, determining an exposure of radiation from the electromagnetic radiation source operable to change a second-layer property of the second plurality of layers of the layer-formed plastic part from an existing state to an altered state without substantially changing a first-layer property of the first plurality of layers*; and

exposing the second plurality of layers of the layer-formed plastic part to the exposure of radiation to change the second-layer property of the second plurality of layers to the altered state. (emphasis added).

Hanna (US 6,574,523)

Hanna teaches a stereo lithography machine to produce layer-formed plastic parts wherein regions of the part may have different material properties. As best shown in Figure 1, according to Hanna, each layer 27 is formed individually by exposing a UV curable liquid 22 with a UV light 27. (4:50-53). Layer-wise modification of properties is achieved, according to Hanna, by controlling the exposure of the UV light 27 during the build-up of each individual layer. (7:23-65).

Hanna fails to disclose, teach, or fairly suggest the method recited in claim 1.

Specifically, Hanna fails to teach or suggest a method that includes, in relevant part, *forming a first plurality of layers* of a partially completed layer-formed plastic part, *forming a second plurality of layers adjacent the first plurality of layers,* and *after the layer-formed plastic part including the first plurality of layers and the second plurality of layers has been formed, determining an exposure of radiation from the electromagnetic radiation source operable to change a second-layer property of the second plurality of layers of the layer-formed plastic part from an existing state to an altered state without substantially changing a first-layer property of the first plurality of layers*. On the contrary, Hanna teaches forming each layer and controlling the properties of each layer individually by exposing a UV curable liquid 22 with a UV light 27. (4:50-53). Therefore, claim 1 is allowable over Hanna.

Ederer (US 6,193,922)

Ederer teaches a method of 3D prototyping using a granulated powder, a resin, and a cutting surface to build up layers of granulated powders. Ederer teaches applying the resin 7 using a dosing device 8 to build up successive layers of a component. (5:59-61). After curing 18 (Figure 3), the component is removed 22 and demoulded 23 (Figure 3).

Ederer fails to remedy the above-noted absent teachings of Hanna, and fails to disclose, teach, or fairly suggest the method recited in claim 1. Specifically, Ederer fails to teach or suggest a method that includes, in relevant part, *forming a first plurality of layers* of a partially completed layer-formed plastic part, *forming a second plurality of layers adjacent the first plurality of layers,* and *after the layer-formed plastic part including the first plurality of layers and the second plurality of layers has been formed, determining an exposure of radiation from the electromagnetic radiation source operable to change a second-layer property of the second plurality of layers of the layer-formed plastic part from an existing state to an altered state without substantially changing a*

*first-layer property of the first plurality of layers*. Ederer merely teaches building up a component in a layer-by-layer process by applying resin 7 using a dosing device 8. Therefore, claim 1 is allowable over Ederer.

Kulkarni (US 6159411)

Kulkarni teaches a process of making three dimensional objects using rapid prototyping. According to Kulkarni, an object is formed by solidifying successive layers of a photopolymerizable material using a laser. (9:43-57). Layer formation and solidification are performed on a layer-by-layer basis until the desired object is formed. (10:19-22). Kulkarni is silent as to the possibility of varying the properties of a first plurality of layers versus a second plurality of layers by varying an exposure of radiation.

Kulkarni fails to remedy the above-noted absent teachings of Hanna and Ederer, and fails to disclose, teach, or fairly suggest the method recited in claim 1. Specifically, Kulkarni fails to teach or suggest a method that includes, in relevant part, *forming a first plurality of layers* of a partially completed layer-formed plastic part, *forming a second plurality of layers adjacent the first plurality of layers,* and *after the layer-formed plastic part including the first plurality of layers and the second plurality of layers has been formed, determining an exposure of radiation from the electromagnetic radiation source operable to change a second-layer property of the second plurality of layers of the layer-formed plastic part from an existing state to an altered state without substantially changing a first-layer property of the first plurality of layers*. According to Kulkarni, the object is formed in a layer by layer process. Therefore, claim 1 is allowable over Ederer.

For the foregoing reasons, claim 1 is allowable over the Cited References (Hanna, Ederer, and Kulkarni). Claims 2, 4-11, and 13-14 depend from claim 1 and are allowable over the Cited References at least due to their dependencies on claim 1, and also due to

additional limitations recited in these claims.

Claims 15-16 and 20-29

As amended, claim 15 recites:

> 15. A method for producing a layer-formed plastic part comprised of at least one plastic material, the method comprising:
>
> successively forming a plurality of layers of a layer-formed plastic part;
>
> *after the layer-formed plastic part including the plurality of layers has been formed, determining an exposure of radiation from an electromagnetic radiation source operable to change a second-layer property of a second portion of the plurality of layers from an existing state to an altered state without changing a first-layer property of a first portion of the plurality of layers*; and
>
> *exposing the second portion of the plurality of layers to the exposure of radiation to change the second-layer property to the altered state without changing the first-layer property of the first portion of the plurality of layers*; and
>
> varying the exposures of radiation to which the first portion of the plurality of layers and the second portion of the plurality of layers are exposed to differently change the properties of respective layers of the first and second portions.

As described more fully above, the Cited References (Hanna, Ederer, and Kulkarni) fail to disclose, teach, or fairly suggest the method recited in claim 15. Specifically, the Cited References fail to teach or suggest a method that includes, in relevant part, successively forming a plurality of layers of a layer-formed plastic part, *after the layer-formed plastic part including the plurality of layers has been formed, determining an exposure of radiation from an electromagnetic radiation source operable to change a second-layer property of a second portion of the plurality of layers from an existing state to an altered state without changing a first-layer property of a first portion*

*of the plurality of layers*, and *exposing the second portion of the plurality of layers to the exposure of radiation to change the second-layer property to the altered state without changing the first-layer property of the first portion of the plurality of layers*. On the contrary, Hanna teaches forming each layer and controlling the properties of each layer individually by exposing a UV curable liquid 22 with a UV light 27. (4:50-53). Similarly, Ederer merely teaches building up a component in a layer-by-layer process by applying resin 7 using a dosing device 8. And Kulkarni simply teaches that an object is formed in a layer by layer process without varying the properties of the layers. Therefore, claim 15 is allowable over the Cited References.

For the foregoing reasons, claim 15 is allowable over the Cited References (Hanna, Ederer, and Kulkarni). Claims 16 and 20-29 depend from claim 15 and are allowable over the Cited References at least due to their dependencies on claim 15, and also due to additional limitations recited in these claims.

*III. Petition for Extension of Time and Authorization to Withdraw from Deposit Account*

Applicants herewith petition the Commissioner of Patents under 37 C.F.R. § 1.136(a)(3) for a two-month extension of time for filing this response. Authorization is hereby granted to withdraw the necessary fees for this extension of time from Deposit Account No. 12-0769, to which any overpayments may be credited and any deficiencies may be charged.

## CONCLUSION

For the foregoing reasons, Applicants respectfully submit that claims 1, 2, 4-11, 13-16, and 20-29 are now in condition for allowance. If there are any remaining matters that may be handled by telephone conference, the Examiner is kindly invited to contact the undersigned attorney at the telephone number listed below.


Respectfully Submitted,

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By: Dale C. Barr

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